



**LOUDOUN COUNTY, VA
TECHNICAL REVIEW**

**PROPOSED
NEW
(2) 90' STEALTH MONOPOLES
(EVERGREEN TREES)
By
COMMUNITY WIRELESS STRUCTURES
(CWS)**

CWS Site # 101 White's Ferry
CMPT 2007-0001
SPEX 2007-0001

Submitted by:
ATLANTIC TECHNOLOGY CONSULTANTS, INC.
A Member of The Atlantic Group of Companies

ATC PROJECT #: 1025-16

November 2, 2007



THE ATLANTIC GROUP
OF COMPANIES INC.

EXECUTIVE SUMMARY:

Community Wireless Structures (“CWS”) of Falls Church, Virginia, has submitted an application to Loudoun County requesting a Special Exception and Commission Permit to construct two (2) 90’ stealth monopoles (“monopines”) on property owned by John D. and Carolyn G. Pepper located in the southeast quadrant of the intersection of James Monroe Highway (Route 15) and Rocky Meadow Lane (Route 9), at 42353 Rocky Meadow Lane, Leesburg, VA.

CWS is a tower developer for wireless infrastructure and offers co-location opportunities for eligible wireless carriers such as cellular, PCS, paging, and backhaul providers. CWS has submitted a letter of interest from Verizon Wireless (“VZW”), Fibertower Corporation (“Fibertower”), and Mobile Satellite Ventures (“MSV”). Verizon Wireless is a FCC licensed telecommunications provider authorized and mandated to provide wireless communications services to the Loudoun County area. Fibertower is a wireless backhaul provider currently doing a network design in Loudoun County. MSV is currently designing a network for the Washington DC market in preparation for offering a new wireless service.

This report outlines the specific areas of evaluation with respect to this proposal, and this consultant’s recommendations regarding the Application package as presented. Supporting and clarifying evidence regarding the suitability of the proposed design in meeting the specified coverage goals is also included.

It is the opinion of this Consultant that the pending Nextel-Rockland Farm application proposing an 85’ silo is superior to this proposed site application. See Section 3.0 “Recommendations” of this document for additional details.

George N. Condyles IV

George N. Condyles, IV
President and COO
Atlantic Technology Consultants, Inc.

1.0 **TECHNICAL:**

1.1 **Siting**

The proposed tower site is a 60' x 80' fenced compound on an approximately 4800 square foot portion of an 11.75 acre parent parcel. The property is zoned AR-1 (Agricultural Rural-1) and located on Tax Map 30 ((4)), Parcel 1 (MCPI # 183-30-6543). The proposed site, located North of Leesburg on the east side of James Monroe Highway (Route 15), can be accessed off of Rocky Meadow Lane and is physically located at coordinates N 39° 10' 6.01" and W 77° 32' 4.74" at a ground elevation of 230.719'.

The Applicant is proposing to construct two (2) 90' monopines disguised as evergreen pine trees with 4' lightning rods, which can accommodate up to three (3) co-locators on each monopine. The site compound could accommodate approximately 6-8 shelters or cabinets and could be accessed via a proposed 12' wide gravel access driveway.

Setback:

The tower complies with the County's setback requirement that "...towers shall be set back one (1) foot for every five (5) feet in height from the property line." [Loudoun County 1993 Zoning Ordinance, Section 5-618 (C) (3) (e)]. In other words, it is a 20% setback requirement. The Site Plan submitted with this Application shows the proposed 90' monopine setback from the nearest property line approximately 172', which is 191% of the height of the tower and greater than the ATC recommendation of 110%.

The nearest occupied dwelling to the monopine is approximately 350'. Upon review of the Applicant's site plans, it appears that the proposed monopine site cannot be moved within the property to meet ATC's recommended setback of 750' from the nearest residence.

Geotechnical:

The proposed tower site location is in a limestone conglomerate area, a karst geology that is highly susceptible to rock outcrops, solution channels, and sinkholes. The County is strongly recommending a geophysical analysis be performed prior to special exception approval.

Under Loudoun County's August 22, 2007 "Conditions of Approval" item condition number 6 indicates:

"As part of the initial submittal of a site plan application for this development, the applicant will submit a geotechnical and geophysical analysis of the development site, consistent with

standards in Chapter 6 of the Facilities Standards Manual. The analysis will be sealed by a certified professional engineer with experience in geophysical analysis.”

Landscape Buffer:

The County is recommending an additional buffer to better screen the proposed monopines from adjoining properties and James Monroe Highway (Route 15), a designated Virginia Scenic Byway. According to the County, “Relocating and increasing the width of the tree save area will ensure that the existing trees will not be affected by future utility or road expansion, as well as providing a better dispersion of trees in the event that dead, damaged, dying, or diseased trees are removed from the buffer.” (Page A-18, April 19, 2007 Memorandum)

Under Loudoun County’s August 22, 2007 “Conditions of Approval” item condition number 7 indicates:

“The applicant shall utilize existing mature vegetation along James Monroe Highway (Route 15) to create a 100-foot Landscape Buffer which shall be designated as a Tree Conservation Area (TCA) in the location shown on the Special Exception plat. The TCA shall be inspected annually by a certified arborist for potential disease and insect damage for the duration of the commercial public telecommunication use and these reports shall be submitted to the County. The applicant and property owner reserves the right to remove, in consultation with the County Urban Forester, any dead, damaged, dying or diseased trees and vegetation in the TCA. The Applicant shall maintain TCA equivalent to or greater than the required Type IV Buffer Yard with a minimum width of 100-feet.”

Co-Location:

While co-location is preferable to construction of a new site, with such co-location minimizing visual impact of telecommunications equipment on the surrounding area, there are currently no existing structures within a 2-mile radius on which to co-locate. The nearest telecommunications facility is 3 ½ miles to the north (Lucketts Fire Station) and 3 miles to the south (Town of Leesburg). CWS has designed the two (2) monopines to accommodate up to three (3) co-locations each for a total of six (6) co-locations. The silo at Rockland Farm would accommodate 3 PCS carriers amongst other wireless carriers. If this site was approved, it would only be the recommendation that only one (1) monopole be approved.

1.2 Structural

The two (2) proposed 90' monopine tower designs shall consist of high strength steel and shall be in full compliance of the EIA/TIA-222-F guidelines (the accepted industry standard) for structures, which is mandated to withstand the structural loading of all appurtenances, plus additional wind and ice loading.

Structural drawings of the monopines signed/sealed by a Professional Engineer licensed in the Commonwealth of Virginia demonstrating the towers' ability to structurally accommodate the antennae and associated appurtenances of three (3) co-locations, while complying with all applicable construction and loading standards, guidelines, and codes has NOT been submitted with the Application.

Furthermore, in conformance with County ordinance, work at this site will remain in compliance with ALL federal, state, and local building codes and regulations if work proceeds as outlined in the application.

1.3 RF Exposure

FCC bulletin OET-65 provides guidance for a licensee proposing to construct a telecommunications support structure in calculation of RF exposure limitations, including analysis of the cumulative effect of all transmitters on the structure. Appropriate steps, including warning signage at the site, must be taken to protect both the general public and site workers from unsafe RF exposure in accordance with federal guidelines.

A RF Analysis Report has not been submitted with the Application. In consideration of this proposal to construct two (2) monopines in close proximity to one another within the same compound, a certified RF Analysis Report is recommended.

RF site exposure warning signage placement shall be appropriately planned for this site.

1.4 Grounding

Grounding of all structures and equipment at an RF site is critically important to the safety of both personnel and equipment at the site. Even a single component not meeting this standard places all other site components at risk for substantial damage. All structures and equipment at the site should maintain a ground potential difference of less than 5 ohms.

A grounding plan was not submitted with this Application.

1.5 General Safety

The 60'x80' site compound will be surrounded by suitable seven (7) foot security fence with one (1) foot of barbed wire to prevent unauthorized access to the tower.

Additional safety measures to be placed at this site include RF exposure warning signage, site identification information, and routine and emergency contact information and FCC Registration number.

The Permit Plans should include the installation of an OSHA-approved style of fall prevention cable.

1.6 Interference

An interference study, taking into account all proximally located transmitters and receivers known to be active in the area, is advisable prior to any new tower construction. A full interference study has not been included with the Applicant's design, and therefore it is assumed that such a study has not been performed due to any other carriers pursuing this site. Once carriers apply to co-locate, then the site manager will be required to perform this study.

Should any interference issues be posed with respect to this site, mitigation would nevertheless remain the responsibility of the tower owner and affected carrier(s), and would be regulated by the Federal Communication Commission, having no effect or burden on the County.

2.0 PROCEDUREAL

2.1 FAA Study

An initial search was performed by this consultant via TOWAIR Determination under the ASR online system on the FCC website to determine if registration is required. The TOWAIR determination results were as follows:

"Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided."

2.2 FCC Antenna Site Registration

This site does not yet have, nor is it required to have, an antenna site registration number. For both routine and emergency identification purposes, however, it is recommended that this site be registered with the Federal Communication

Commission. All registered sites should have their registration number conspicuously displayed at the site which is normally on the security fence surrounding the compound area.

2.3 Environmental Impacts

The National Environmental Policy Act of 1969 (NEPA), delineated in Title 47 of the Code of Federal Regulations, Part 1, Subpart I, sections 1.1301-1.1319, requires federal agencies to incorporate environmental considerations into their decision-making process when evaluating new construction proposals. As a licensing agency, the Federal Communication Commission (FCC) requires all licensees to consider the potential environmental effects from their construction of antenna support structures, and to disclose those effects in an Environmental Assessment (EA) that must be filed with the FCC for review.

A NEPA Phase I Evaluation dated August 27, 2007 and prepared by Baxter Consultants, Inc. has been submitted with the Application that indicates NO IMPACT. Upon review of correspondence with consulting agencies, this Consultant did not note any references indicating an impact.

A NEPA Phase I Report should include the following items:

- NEPA Checklist
- NEPA Summary Report
- Associated documentation
 - Figures, Drawings, Maps
 - Tribal Correspondence
 - Land Resources Map and FEMA Floodplain Map
 - SHPO Correspondence (See next Section 2.4 "Historic Impacts)
 - Department of Game and Inland Fisheries Response
 - Department of Conservation and Recreation Response

The NEPA Phase I Assessment is a report that is submitted to the FCC only if requested by the FCC. Otherwise, it shall be reviewed by the appropriate locality for which the proposed tower site is being considered for approval.

2.4 Historic Impacts

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires that State Historic Preservation Offices (SHPO) and the President's Advisory Council on Historic Preservation be given a reasonable opportunity to comment on all undertakings with the potential to affect historic properties. The licensee is required to submit to the SHPO a detailed description of the project, a listing of local historic resources, and a discussion of any measures being undertaken to

mitigate impacts (if any) on historic resources. Upon receipt, the SHPO has thirty (30) days to review and respond to those submissions. All agencies with authority to permit construction are required to consider the SHPO response in its decision making process with respect to new construction applications.

A response dated August 7, 2006 (NOTE: the year should be 2007) from the Virginia Department of Historic Resources (VDHR) was submitted with the Application. VDHR's response is the following:

"...it is our opinion that the construction of the two monopine stealth towers at the height of ninety feet will have no adverse effect upon Macaria (DHR 053-0294) and the Catoctin Rural Historic District (DHR 053-0012)."

2.5 Supporting Documentation

The Applicant did include documentation supporting the construction of the proposed site in the form of propagation mapping. RF coverage maps from Verizon Wireless showing their wireless coverage with and without the proposed CWS site was submitted.

An independent RF analysis has been performed by this consultant, with a coverage map appended to this report, verifying that the applicant will be able to meet their stated coverage objectives to provide the wireless coverage necessary to alleviate the lack of coverage encountered in this area.

Supporting documentation in the form of photo-simulation was submitted with the Application. This Consultant believes the photo-sims are an accurate representation of the monopines from various locations, including historic property, surrounding the proposed site.

2.6 Pending Nextel – Rockland Farm Application

Another site being considered for approval in this same area is an 85' stealth silo being proposed by Nextel to be constructed on a 2,400 square foot lease area on Rockland Farm. The proposed site would be located approximately 500 feet east of James Monroe Highway (Route 15) in the northwest portion of an approximately 485.75-acre tract approximately 0.9 mile north of intersection of Whites Ferry Road (Route 655) at 16306 Rockland Lane, Leesburg. The Nextel Application was submitted prior to CWS' Application.

3.0 RECOMMENDATIONS

This application is redundant to the Rockland Farm Application. It should be denied on this bases and the fact of the 750' setback from a nearest residence can not be accomplished along with the fact that the Nextel silo is less obtrusive.

If this tower is approved, it should be only approved with one (1) 90' monopine tower.

- A geotechnical and geophysical analysis of the development site;
- Structural Drawings;
- Grounding specifications;
- An interference study;

In addition, the County should consider the setback issue previously mentioned in Section 1.1. The 90' monopine cannot meet a 750' setback from the nearest residence on this property.

It is the opinion of this Consultant that the pending Nextel-Rockland Farm application proposing an 85' silo is superior to this proposed site application. However, if the County chooses to approve this Application, then ATC recommends only one 90' monopine should be considered for approval for this Application.

In closing, this consultant remains available to address any comments or questions which may arise after review of this report. Any interested party with such comments or questions may feel free to contact this firm, which remains committed to delivering independent, objective, unbiased, and thorough consulting services.

Respectfully submitted,

George N. Condyles IV

George N. Condyles, IV
President & COO



Street of Tower Location



Rocky Meadow Lane



Access from Rocky Meadow Lane



**Nearest Off Site Residence to the South
This Residence will have a view of the monopines**



On Site Residence

Tower less than 400' from house.



View from the West of Pine Buffer



View from Across the Street



Mono Pine Located @ Mount Vernon

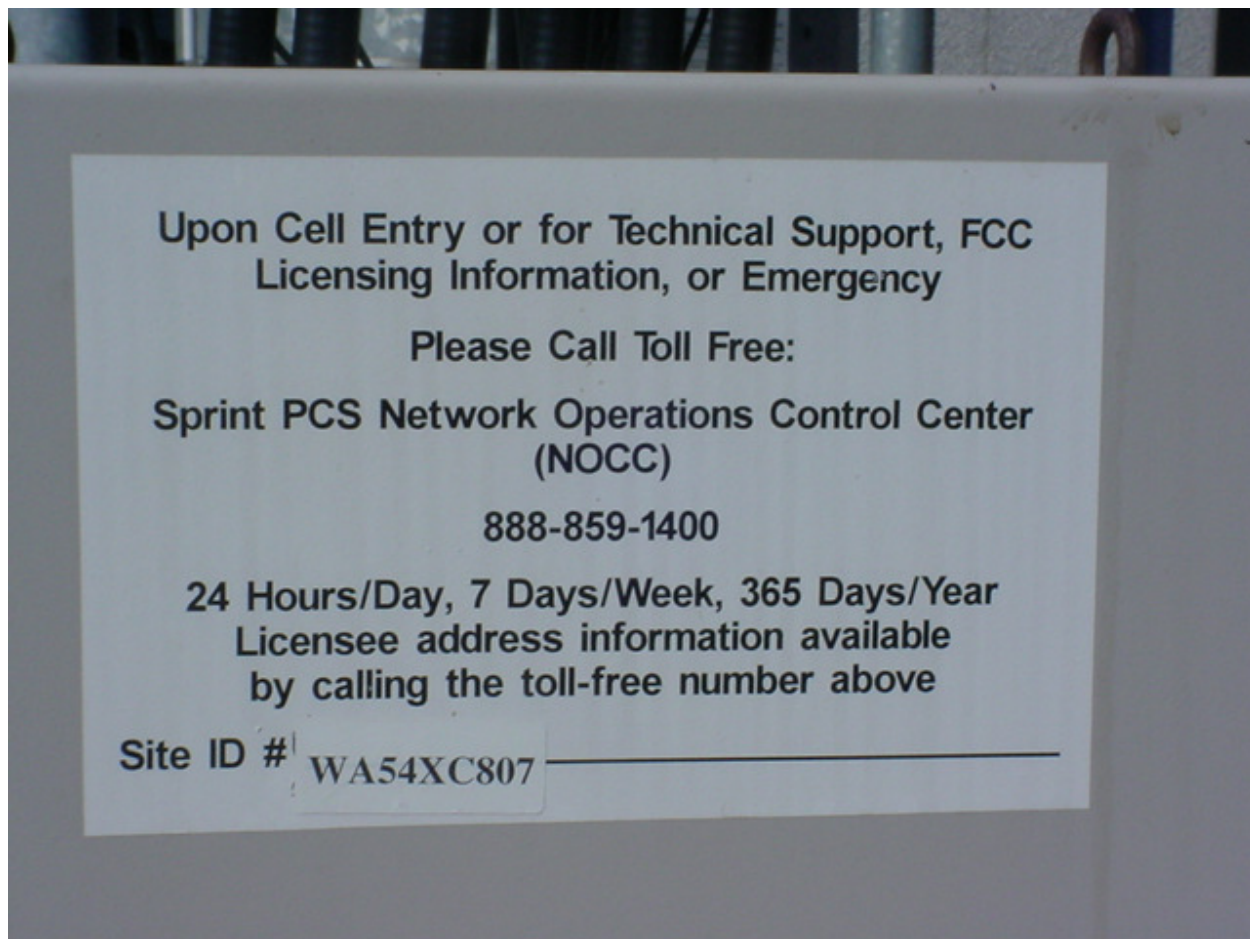


**LOU-033 – Verizon Tower- Leesburg
Co-locators
Verizon
Sprint/Nextel
T-Mobile
Cingular
Etc.**

Hand-off Site



**Crown- Lockett's
Verizon
Sprint/Nextel
T-Mobile
Cingular
Cell One
Fiber Tower
Hand-off Site**



Sprint/Nextel @ Lockett's Tower



Antenna Structure Registration

[FCC](#) > [WTB](#) > [ASR](#) > [Online Systems](#) > TOWAIR

[FCC Site Map](#)

TOWAIR Determination Results

[? HELP](#)
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*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

Your Specifications

NAD83 Coordinates

Latitude	39-10-06.0 north
Longitude	077-32-04.7 west

Measurements (Meters)

Overall Structure Height (AGL)	28.7
Support Structure Height (AGL)	27.4
Site Elevation (AMSL)	70.3

Structure Type

TOWER - Free standing or Guyed Structure used for Communications Purposes

Tower Construction Notification

Notify Tribes and Historic Preservation Officers of your plans to build a tower.

Note: Notification does NOT replace [Section 106 Consultation](#).

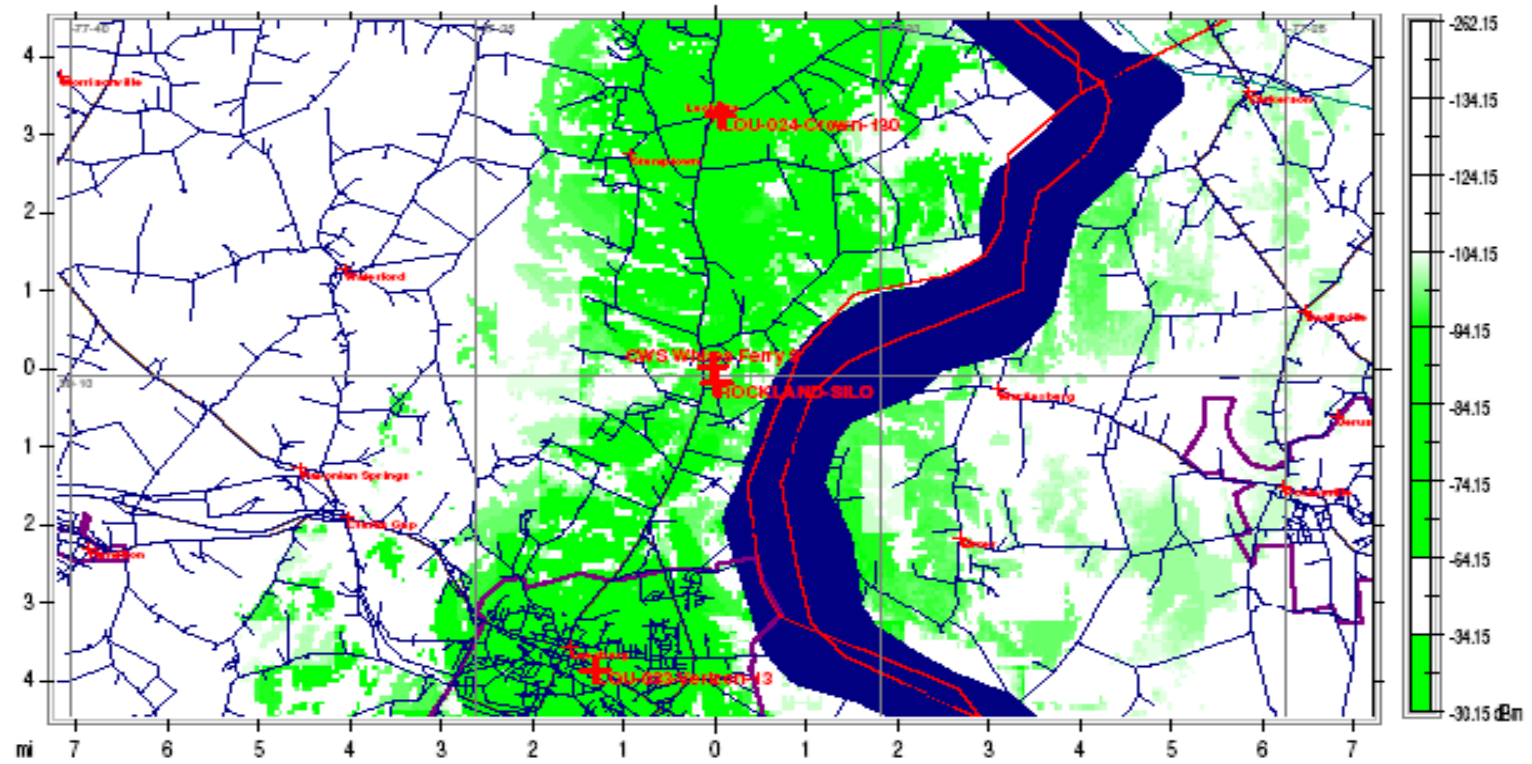
ASR Help	ASR License Glossary - FAQ - Online Help - Documentation - Technical Support
ASR Online Systems	TOWAIR - CORES - ASR Online Filing - Application Search - Registration Search
About ASR	Privacy Statement - About ASR - ASR Home

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[Help](#) | [Tech Support](#)

Federal Communications Commission
445 12th Street SW

Phone: 1-877-480-3201
TTY: 1-717-338-2824

LOUDON COUNTY, VIRGINIA



LOU-033 & LOU-024

The map displays the Los Angeles Harbor area with noise contours. The color scale on the right indicates noise levels in dBm, ranging from -30.15 to -262.15. The map is titled 'CWS-90 AGL'.

LOU-033 & LOU-024 & WHITE'S FERRY